

U.S. Application Serial No. 09/911,088  
Response to Office Action  
Page 2 of 5

### AMENDMENTS

#### In the Claims:

Please cancel Claims 15, 17-34, 35, and 37-66 without prejudice, and please add Claim 67.

The currently pending and amended claims are below. Please amend the claims following wherein amendment is indicated in parenthesis, wherein the deleted matter is shown by strikethrough, and wherein the added matter is shown by underlining.

1. (Currently amended) A method of obtaining site-specific replacement of a DNA of interest in a plant eukaryotic cell, comprising:
  - a) providing a plant eukaryotic cell that comprises a receptor construct, wherein the receptor construct comprises a ~~receptor~~ first polynucleotide to be replaced flanked by two or more copies of an irreversible recombination site (IRS), wherein the IRS comprises a first nucleic acid sequence;
  - b) introducing into the cell a donor construct that comprises a ~~donor~~ second polynucleotide to replace the first polynucleotide flanked by two or more copies of a complementary irreversible recombination site (CIRS), wherein the CIRS comprises a second nucleic acid sequence; and
  - c) contacting the receptor construct and the donor construct with an irreversible recombinase polypeptide;
  - d) wherein the irreversible recombinase catalyzes recombination between the nucleic acids of the IRS and the CIRS and replacement of the ~~receptor~~ first polynucleotide with the ~~donor~~ second polynucleotide, thereby forming a replacement construct.
2. (Original) The method of claim 1, wherein the donor construct is linear.
3. (Original) The method of claim 1, wherein the donor construct is a circular vector.
4. (Original) The method of claim 1, wherein the donor construct is a chromosome.
5. (Original) The method of claim 1, wherein the receptor construct is a chromosome.

U.S. Application Serial No. 09/911,088

Response to Office Action

Page 3 of 5

6. (Previously presented) The method of claim 1, wherein the receptor construct comprises two copies of the IRS and the donor construct comprises two copies of the CIRS.
7. (Original) The method of claim 6, wherein the IRS are inverted with respect to each other and wherein the CIRS are inverted with respect to each other.
8. (Currently amended) The method of claim 6, wherein the donor second polynucleotide further comprises a promoter operably linked to a DNA of interest.
9. (Previously presented) The method of claim 6, wherein the receptor construct further comprises a promoter that is adjacent to one copy of the IRS.
10. (Original) The method of claim 9, wherein the promoter is located in the 5 prime direction from the IRS.
11. (Original) The method of claim 9, wherein the receptor construct further comprises a second promoter operably linked to a selectable marker.
12. (Currently amended) The method of claim 9, wherein the ~~receptor~~ first polynucleotide or the donor second polynucleotide further comprises a negative selectable marker.
13. (Currently amended) The method of claim 9, wherein the ~~receptor~~ first polynucleotide or the donor second polynucleotide further comprises a nucleic acid encoding the irreversible recombinase polypeptide.
14. (Currently amended) The method of claim 13, wherein the ~~receptor~~ first polynucleotide comprises the nucleic acid encoding the irreversible recombinase polypeptide.
15. (Canceled)
16. (Currently amended) The method of claim 14 ~~45~~, wherein the irreversible recombinase is a bacteriophage  $\phi$ C31 integrase.

Claims 17-34 (Canceled)

35. (Canceled)

36. (Currently amended) The method of claim 1 ~~35~~, wherein the eukaryotic cell is a plant cell is an Arabidopsis thaliana cell.

Claims 37-66 (Canceled)